Remarks

Applicant thanks the Examiner for kindly withdrawing the objection to claims 39 and 51. The typographical error in claim 12 as listed in the Listing of the Claims has been corrected in the attached Listing of the Claims. Accordingly, Applicant submits that the objection to claim 12 has been overcome and request that it be withdrawn.

The claims are directed to methods that include condensing vapor from an atmosphere. For condensation to occur in a system, energy must be added to or taken away from the system.

Claims 1, 3, 4, 7, 12, 14-17, 22, 32, 33 and 52 stand rejected under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al. and further in view of Beach et al. (U.S. 4,291,244)

Popov et al. disclose a method of making a charged filter. The method of Popov et al. includes passing liquid vapor through a cloth followed by removal of the liquid vapor with blowing air. In the Examples, Popov et al. describe passing air saturated with vapors of isopropyl alcohol, methanamide [sic], ethyl alcohol or dimethylformamide through a layer of polypropylene or polyamide filaments and removing the liquid by blowing clean air though the layer.

Angadjivand et al. disclose a method of hydrocharging a filter media to produce an electret. The method includes impinging jets of water or a stream of water droplets on a fibrous web. Angadjivand et al. disclose that hydrocharging of the web is carried out by impinging jets of water or a stream of water droplets onto the web at a pressure sufficient to provide the web with filtration enhancing electret charge. Angadjivand et al. further disclose that generally pressures in the range of about 10 psi to 500 psi are suitable.

Beach et al. disclose a process for preparing a parylene polymer electret film. The process includes providing two electrodes, providing a dipolar substituted p-xylylene monomer vapor to coat the opposing surfaces of the electrodes, activating the electrodes, and introducing the vapor into a deposition chamber that is under vacuum and at a temperature at which the vapor will condense. Beach et al. further disclose that the monomer vapor condenses on opposing surfaces of the electrodes and the monomers polymerize to parylene, which coats the surfaces and becomes the electret. Beach et al.

disclose that the parylene film, which is an electret as a result of the process, can be stripped from the metal electrode and will be self-supporting.

Claim 1 is directed to a method of making an electret. The method includes condensing vapor from the atmosphere of a controlled environment of a chamber onto a dielectric article to form a condensate thereon. The method further includes drying the article to remove the condensate. As a preliminary matter, Applicant disagrees with the conclusory statement in the September 11, 2003 Office action indicating that Popov et al. disclose condensing vapor from the atmosphere of a controlled environment. Popov et al. do not teach condensing vapor --let alone condensing vapor from the atmosphere of a controlled environment. In order to condense vapor, energy must be added to or taken away from the system. Popov et al. do not teach that energy is added to or taken away from their system. Rather, Popov et al. disclose passing a stream of liquid vapor through a cloth. Passing a stream of liquid vapor through a cloth does not inherently add or take away energy from the system and therefore cannot inherently result in condensation. Thus, it has not been established that Popov et al. teach condensing vapor.

Angadjivand et al. also fail to teach or suggest "condensing vapor" and further fail to teach or suggest "condensing vapor from the atmosphere of a controlled environment of a chamber onto a dielectric article," as required by claim 1. This is undisputed as demonstrated by the April 11, 2001 Office action, wherein the Examiner states, "Angadjivand et al. do not teach condensing vapor from an atmosphere onto a dielectric article to form a condensate thereon" (April 11th Office action, page 7).

Beach et al. do not cure the deficiencies of Popov et al. and Angadjivand et al. To establish a *prima facie* case of obviousness based upon a proposed combination of references there must be a teaching, suggestion or motivation in the prior art for making the proposed combination. See M.P.E.P. 2142; Fromson v. Anitec Printing Plates, Inc., 132 F.3d 1437 (Fed. Cir. 1997); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352, (Fed. Cir. 1998). The suggestion or motivation to make the proposed combination must be found in the prior art and must not be based on Applicants' disclosure. See M.P.E.P. 2142. Here there is no such teaching, suggestion, or motivation. As demonstrated above, neither Popov et al. nor Angadjivand et al. teach or suggest condensing vapor. Beach et al. also do not teach or suggest condensing vapor on a dielectric article. To the contrary,

Beach et al. condense vapor on an electrode. Beach et al. disclose that when forming an electret it is necessary to polymerize the monomer on an electrode material. Thus, Beach et al. disclose that the substrate must be an electrode in order to form an electret from the depositing polymer film. Therefore, the skilled artisan, upon reading Beach et al., would have no reason to condense vapor on a dielectric article. The proposed combination of Popov et al., Angadjivand et al. and Beach et al. thus lacks a required element of claim 1, i.e., a teaching or a suggestion of condensing vapor on a dielectric article. For this reason alone the rejection of claim 1 under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al. and further in view of Beach et al. cannot stand and must be withdrawn.

The proposed combination of Popov et al., Angadjivand et al. and Beach et al. is further deficient for at least the following additional reasons. The method of Beach et al. requires the use of a deposition chamber to condense and polymerize p-xylylene monomer on the surfaces of a substrate so as to form a polymer film. The polymer film formed from the p-xylylene monomer is, itself, an electret. Thus, the purpose of the deposition chamber and of the condensation step of Beach et al. is to form a polymer film. The method of Popov et al. does not require the formation of a polymer film and the liquid vapors of Popov et al. cannot form a polymer film. In addition, nothing in Beach et al. teaches or suggests the need to use a deposition chamber for vapors of nonpolymerizable liquids such as the isopropyl alcohol, methanamide, ethyl alcohol and dimethylformamide disclosed by Popov et al. Therefore a person of ordinary skilled in the art would not think to use the deposition chamber of Beach et al. in practicing the method of Popov et al. and further would find Beach et al. to have no bearing on the method of Popov et al. In light of the above, Applicant submits that a *prima facie* case of obviousness of the method of claim 1 has not been established. Accordingly, the rejection of claim 1 under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al. and further in view of Beach et al. cannot stand and must be withdrawn.

Claims 3, 4, 7, 12, 14-17, 22, 32, 33 and 52 are distinguishable under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al. and further in view of Beach et al. for at least the same reasons set forth above in distinguishing claim 1.

Claim 33 is further distinguishable over Popov et al. in view of Angadjivand et al. and further in view of Beach et al. for at least the following additional reasons. Claim 33 is directed to a method of making an electret that includes altering at least one property of a controlled environment of a chamber so as to cause vapor of the atmosphere of the controlled environment to condense on a dielectric article having a resistivity of greater than 10^{14} ohms-cm, the dielectric article being disposed in the controlled environment, and drying the article to remove the condensate. As established above with respect to claim 1, Popov et al. and Angadjivand et al. fail to teach or suggest condensing vapor. Therefore it cannot be disputed that they further fail to teach or suggest altering at least one property of a controlled environment of a chamber so as to cause vapor of the atmosphere of the controlled environment to condense on a dielectric article. Moreover, because the object of Popov et al. and Angadjivand et al. is not to condense vapor on a substrate, the skilled artisan would have no reason to alter a property of a controlled environment so as to cause condensation.

Beach et al. do not cure the deficiencies of Popov et al. and Angadjivand et al. Beach et al. disclose that, when forming an electret, it is necessary to polymerize the monomer on an electrode material. Thus Beach et al. disclose that the substrate must be an electrode in order to form an electret from the depositing polymer film. Therefore, the skilled artisan, upon reading Beach et al., would have no reason to alter a property of a controlled environment of a chamber so as to cause vapor of the atmosphere of the controlled environment to condense on a dielectric article.

The September 11th Office action indicates that increasing the amount of alcohol vapor present in a controlled environment of a chamber by passing vapors through a layer will cause the vapor to condense on a cloth or web (see September 11th Office action, page 7). However, as set forth above, to establish a *prima facie* case of obviousness, based upon a proposed combination of references there must be a teaching, suggestion or motivation in the prior art for making the proposed combination. See M.P.E.P. 2142; Fromson v. Anitec. Nothing in Popov et al. or Angadjivand et al. or Beach et al. or any combination thereof teaches or suggests increasing the amount of alcohol vapor present in a controlled environment of a chamber so as to cause the vapor to condense on a cloth or web. Therefore, the skilled artisan would not think to do so. For at least these

additional reasons Applicant submits that the rejection of claim 33 under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al. and further in view of Beach et al. is unwarranted and should be withdrawn.

Claims 10, 11 and 13 stand rejected under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al., further in view of Beach et al., and further in view of Coufal et al. (U.S. 5,280,406).

The descriptions of the disclosure of Popov et al., Angadjivand et al., and Beach et al. set forth above are incorporated herein.

Coufal discloses a high velocity tribocharging method in which jets of a fluid, e.g., a liquid or a gas, are passed at high velocity over the surface of a dielectric. The fluid flowing along the surface acquires or loses a net charge to the surface. As the fluid flows along the surface, the potential at the surface continues to increase until a maximum value is reached.

Claim 10 depends from claim 1 and further states that the condensate is an aqueous liquid. Claim 11 depends from claim 1 and further states that the condensate consists essentially of water. Claim 13 depends from claim 1 and further states that the condensate is selected from the group consisting of acetone, methanol, ethanol, liquid carbon dioxide, butanol or a combination thereof. As established above, neither Popov et al. nor Angadjivand et al. nor Beach et al. nor any combination thereof teaches or suggests condensing vapor from the atmosphere of a controlled environment onto a dielectric article.

Coufal et al. do not cure the deficiencies of Popov et al. and Angadjivand et al. and Beach et al. The method of Coufal et al. relies on tribocharging to impart a charge to a film substrate. Tribocharging is a friction-based charging technique that generates static electricity. The most common example of tribocharging is a person walking across a floor (e.g., carpeting). The method of Coufal et al. relies on the friction created between the fluid and the surface as the fluid passes over the surface to impart a charge to the surface. Nothing in the tribocharging method of Coufal et al. teaches or suggests anything about condensing vapor from the atmosphere of a controlled environment onto a dielectric article –let alone that condensing vapor from the atmosphere of a controlled environment onto a dielectric article will impart an electret charge to the dielectric article.

Thus, the proposed combination of Popov et al., Angadjivand et al., Beach et al., and Coufal et al. lacks a required element of claims 10, 11 and 13, i.e., condensing vapor from the atmosphere of a controlled environment onto a dielectric article. Applicants submit, therefore, that a *prima facie* case of obviousness has not been proven. Accordingly, the rejection of claims 10, 11 and 13 under 35 U.S.C. § 103 over Popov et al. in view of Angadjivand et al., further in view of Beach et al., and further in view of Coufal et al. cannot stand and Applicant requests that it be withdrawn.

Claims 1, 3, 4, 7, 9-11, 14-17, 22, 32, 33 and 52 stand rejected under 35 U.S.C. § 103 over Angadjivand et al. in view of Pike et al.

The disclosure of Angadjivand et al. has been described above and is incorporated herein.

Pike et al. disclose a method of splitting conjugate fibers that have at least two incompatible polymer compositions. The method of Pike et al. includes contacting conjugate fibers with a hot aqueous split-inducing medium such as a hot water bath or a spray of hot water or steam for a period sufficient to split the conjugate fibers.

As indicated above, the method of claim 1 includes condensing vapor from the atmosphere of a controlled environment of a chamber onto a dielectric article to form a condensate thereon. As further established above, it is undisputed that Angadjivand et al. fail to teach condensing vapor (see, April 11, 2001 Office action, page 7, wherein the Examiner states, "Angadjivand et al. do not teach condensing vapor from an atmosphere onto a dielectric article to form a condensate thereon").

Pike et al. do not cure the deficiencies of Angadjivand et al. Pike et al. disclose spraying steam on conjugate fibers. The purpose of the steam of Pike et al. is to split (i.e., destroy the integrity of) the conjugate fibers. Angadjivand et al. do not seek to destroy the integrity of the fibers of their nonwoven web. Therefore, the person of ordinary skill in the art familiar with Angadjivand et al. would have no reason to look to Pike et al. Moreover, Pike et al. do not teach or suggest that their spray of steam can impart an electret charge to a web. Therefore the skilled artisan would have no reason to employ the steam of Pike et al. in the method of Angadjivand et al. For at least the foregoing reasons Applicant submits that a *prima facie* case of obviousness of the method of claim 1 has not been established. Accordingly, the rejection of claim 1 under 35

U.S.C. § 103 over Angadjivand et al. in view of Pike et al. cannot stand and must be withdrawn.

Claims 3, 4, 7, 9-11, 14-17, 22, 32, 33 and 52 are distinguishable over Angadjivand et al. in view of Pike et al. for at least the same reasons set forth above in distinguishing claim 1.

The claims now pending in the application are in condition for allowance and such action is respectfully requested. The Examiner is invited to telephone the undersigned should a teleconference interview facilitate prosecution of this application.

Please charge any additional fees owing or credit any over payments made to Deposit Account No. 501,171.

Respectfully submitted,

Date: November 11, 2003

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LISTING OF THE CLAIMS

1.(Previously presented) A method of making an electret comprising:

condensing vapor from the atmosphere of a controlled environment of a chamber onto a dielectric article to form a condensate thereon, said dielectric article having a resistivity of greater than 10^{14} ohms-cm and being disposed in said controlled environment; and

drying the article to remove the condensate,

wherein the electret exhibits a persistent electric charge.

Claim 2 (cancelled)

3.(Original) The method of claim 1, wherein the dielectric article comprises a nonconductive polymeric material.

4. (Original) The method of claim 1, wherein the condensate includes a polar liquid.

5. (Original) The method of claim 1, wherein the controlled environment further comprises a liquid, and the method further comprises:

placing the article in the liquid before condensing the vapor; and

decreasing the pressure on the atmosphere such that at least a portion of the liquid evaporates into the atmosphere.

6. (Original) The method of claim 1, wherein the step of condensing the vapor comprises increasing the pressure on the atmosphere such that the vapor condenses on the article.

7. (Original) The method of claim 1, wherein the step of condensing comprises placing an article at temperature T1 in contact with the vapor, the vapor being at a

temperature T2, where T1 is sufficiently less than T2 such that the vapor condenses on the article.

8. (Original) The method of claim 1, wherein the step of condensing comprises an adiabatic expansion.

9. (Original) The method of claim 1, wherein the controlled environment comprises a vacuum chamber.

10. (Original) The method of claim 4, wherein the polar liquid is an aqueous liquid.

11. (Original) The method of claim 1, wherein the condensate consists essentially of water.

12. (Original) The method of claim 1, wherein the condensate is selected from the group consisting of acetone, methanol, ethanol, liquid carbon dioxide, butanol, or a combination thereof.

13. (Original) The method of claim 1, wherein the condensate comprises a fluorocarbon.

14. (Original) The method of claim 1, wherein the article is nonwoven fibrous web.

15. (Previously presented) The method of claim 14, wherein the nonwoven fibrous web comprises microfibers.

16. (Original) The method of claim 15 wherein the microfibers are melt blown.

17. (Original) The method of claim 16, wherein the melt blown microfibers comprise polypropylene, poly-(4-methyl-1-pentene) or a combination thereof.

18.(Previously presented) The method of claim 1, wherein the controlled environment further comprises a liquid, and the method further comprises

altering a first property of the environment such that at least a portion of the liquid evaporates into the atmosphere; and

altering a second property of the environment such that the vapor condenses on the surface of the article.

19.(Original) The method of claim 18, wherein the first property is selected from the group consisting of pressure, volume or temperature, or a combination thereof, and wherein the second property is selected from the group consisting of pressure, volume or temperature, or a combination thereof.

20.(Original) The method of claim 19, wherein the first property comprises pressure and the second property comprises pressure.

21.(Original) The method of claim 19, wherein the first property comprises volume and the second property comprises volume.

22.(Original) The method of claim 1, wherein the electret exhibits persistent electric charge, wherein the dielectric article comprises a nonconductive polymeric material and wherein the condensate comprises a polar liquid.

Claims 23 and 24 (withdrawn)

25.(Previously presented) A method of making an electret, which method comprises:

placing a dielectric article in a liquid of a controlled environment;

condensing vapor from the atmosphere of the controlled environment onto the dielectric article to form a condensate thereon;

decreasing the pressure on the atmosphere of the controlled environment such that at least a portion of the liquid evaporates into the atmosphere; and then

drying the article.

26.(Previously presented) A method of making an electret, which method comprises:

condensing vapor from the atmosphere of a controlled environment onto a dielectric article to form a condensate thereon, said condensing comprising increasing the pressure on the atmosphere of the controlled environment such that the vapor condenses on the article; and then

drying the article.

27.(Previously presented) A method of making an electret, which method comprises:

condensing vapor from the atmosphere of a controlled environment onto a dielectric article by an adiabatic expansion to form a condensate on the dielectric article; and then

drying the article

28. (Previously presented) A method of making an electret, which method comprises:

altering a first property of a controlled environment comprising atmosphere and liquid such that at least a portion of the liquid evaporates into the atmosphere to form vapor;

altering a second property of the environment such that the vapor condenses on the surface of a dielectric article; and then

drying the article.

29. (Previously presented) The method of claim 28, wherein the first property is selected from the group consisting of pressure, volume or temperature, or a combination thereof, and wherein the second property is selected from the group consisting of pressure, volume or temperature, or a combination thereof.

30. (Previously presented) The method of claim 29, wherein the first property comprises pressure and the second property comprises pressure.

31. (Previously presented) The method of claim 29, wherein the first property comprises volume and the second property comprises volume.

32.(Previously presented) A method of making an electret, which method comprises:

condensing vapor from the atmosphere of a controlled environment of a chamber onto a dielectric article to form a condensate thereon, the dielectric article comprising a nonconductive polymeric material, and the condensate comprising a polar liquid; and

drying the article to form an electret exhibiting a persistent electric charge.

33.(Previously presented) A method of making an electret comprising:

altering at least one property of a controlled environment of a chamber so as to cause vapor of the atmosphere of the controlled environment to condense on a dielectric article having a resistivity of greater than 10^{14} ohms-cm, said dielectric article being disposed in said controlled environment; and

drying the article to remove the condensate,

wherein the electret exhibits a persistent electric charge.

34. (Previously presented) A method of making an electret, which method comprises:

altering the volume of a controlled environment that comprises atmosphere and liquid such that at least a portion of the liquid evaporates into the atmosphere to form vapor;

altering the volume of the environment such that the vapor condenses on the surface of a dielectric article; and then

drying the article.

35. (Previously presented) A method of making an electret comprising:

altering at least one property of a controlled environment so as to cause the vapor of the atmosphere of the controlled environment to condense on a dielectric article having a resistivity of greater than 10^{14} ohms-cm, said property being selected from the group consisting of volume, pressure or temperature of the controlled environment; and

drying the article.

36. (Previously presented) The method of claim 25, wherein the electret exhibits a persistent electric charge.

37. (Previously presented) The method of claim 25, wherein the dielectric article comprises a nonconductive polymeric material.

38. (Previously presented) The method of claim 25, wherein the condensate that forms when the vapor condenses on the dielectric article includes a polar liquid.

39.(Previously presented) The method of claim 35, wherein the controlled environment further comprises a liquid, and the method further comprises:

placing the article in the liquid; and

decreasing the pressure on the atmosphere such that at least a portion of the liquid evaporates into the atmosphere.

40. (Previously presented) The method of claim 35, wherein altering the property comprises increasing the pressure on the atmosphere such that the vapor condenses on the article.

41. (Previously presented) The method of claim 35, wherein said altering comprises an adiabatic expansion.

42. (Previously presented) The method of claim 25, wherein the controlled environment comprises a vacuum chamber.

43. (Previously presented) The method of claim 38, wherein the polar liquid is an aqueous liquid.

44. (Previously presented) The method of claim 38, wherein the condensate consists essentially of water.

45. (Previously presented) The method of claim 38, wherein the condensate is selected form the group consisting of acetone, methanol, ethanol, liquid carbon dioxide, butanol, or a combination thereof.

46. (Previously presented) The method of claim 38, wherein the condensate comprises a fluorocarbon.

47. (Previously presented) The method of claim 38, wherein the article is nonwoven fibrous web.

48. (Previously presented) The method of claim 47, wherein the nonwoven fibrous web comprises microfibers.

49. (Previously presented) The method of claim 48, wherein the microfibers are melt blown.

50. (Previously presented) The method of claim 49, wherein the melt blown microfibers comprise polypropylene, poly-(4-methyl-1-pentene), or a combination thereof.

51. (Previously presented) The method of claim 33, wherein the controlled environment further comprises a liquid, and the method further comprises altering a first property of the environment such that at least a portion of the liquid evaporates into the atmosphere.

52.(Previously presented) A method of making an electret in a chamber comprising a controlled environment comprising an atmosphere comprising vapor conditioned to a temperature of T2, the method comprising:

condensing the vapor from the atmosphere onto a dielectric article having a resistivity greater than 10^{14} ohms-cm and a temperature T1; and

drying the article to remove the condensate,

the electret exhibiting a persistent electric charge.